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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,609	09/26/2003	Patrick T. Bohan	TI-35906	3216
23494 7590 12/18/2006 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER COSIMANO, EDWARD R	
			ART UNIT 2863	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/672,609

Applicant(s)

BOHAN, PATRICK T.

Examiner

Edward R. Cosimano

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 20030926.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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1. The Oath/Declaration and Abstract as originally filed are acceptable to the examiner.
2. The set of drawings containing figures 1, 2, 3, 4A, 4B, 4C, 4D, 5 as presented in the set of drawings filed on 26 September 2003 are acceptable to the examiner.
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.1 Claims 1-21 are rejected under 35 U.S.C. 102(a) as being anticipated by Cherubal et al (6,476,741).

3.2 Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Cherubal et al (2002/0030615).

3.3 In regard to claims 1-21, either Cherubal et al ('615 or '741) disclose a machine/process for compensating for the non-linear operation of an analog to digital converter (ADC). To this end as taught by either Cherubal et al ('615 or '741) at each transition between output codes of the ADC there are both "integral non-linearity" (INL) errors and "differential non-linearity" (DNL) errors between the actual value of the analog signal being converted and the corresponding digital code produced by the ADC, that are determined and used to generate a mathematical model of the operation of the ADC. This modeled characteristic operation of the ADC is then used to provide the compensation/calibration characteristics for the ADC that may be used to train and test ADCs.

3.1.1 In regard to the type of modeling used in the machine/process of either Cherubal et al ('615 or '741) as would be understood by one of ordinary skill at the time the invention was made because each bit of the ADC has two states, that is either "on" or "off", the model that is used in the machine/process of either Cherubal et al ('615 or '741) inherently must consider "bi-state functionality."

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3.3.2 It is noted that the errors that occur in the machine/process of either Cherubal et al ('615 or '741) as would be understood by one of ordinary skill at the time the invention was made are caused by a combination of both (A) the characteristics of the components used to construct the ADC, and (B) the difference between any two quantization levels for the ADC.

4. The examiner has cited prior art of interest, for example:

A) either Slocumb (2,839,744) or Gray (3,349,195) or Bard et al (3,354,452) disclose that the operation of converting between a digital value and the corresponding analog value is a non-linear process and hence the output signal may need to be compensated for such a non-linear operation.

B) Signell et al (5,995,035) discloses that because the process of converting values between analog value and the corresponding digital value is non-linear, various offset errors occur at each of the digital code values that the converter can process, see figures 8 & 9.

C) Signell et al (6,028,546) discloses that because the process of converting values between analog value and the corresponding digital value using a pipe-line converter is non-linear, various offset errors occur at each of the digital code values that the converter can process, see figures 10 & 11.

D) Horie (6,320,530) discloses a process of converting between analog values and digital values in which the offset error of successive stages is reduced.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward R. Cosimano whose telephone number is 571-272-0571. The examiner can normally be reached on 571-272-0571 from 7:30am to 4:00pm (Eastern time).

5.1 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow, can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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5.2 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ERC

12/11/2006

A handwritten signature in cursive script that reads "Edward Cosimano".

**Edward Cosimano**  
**Primary Examiner**